

APPROXIMATING TO THE NEAREST HUNDREDTH AND THOUSANDTH

1 **Approximate 4.7398 to the nearest**

Ⓐ hundredth Ⓑ thousandth

2 **Choose the correct answer from parantheses:**

Ⓐ 736.592 ≃ 736.59 to the nearest ....

(tenth - hundredth - thousandth).

Ⓑ 82.497 ≃ 82.50 to the nearest..............

(tenth - hundredth - thousandth).

Ⓒ $3\frac{1}{8}$ ≃ .... to the nearest hundredth .

(3.10 - 3.12 - 3.13)

Ⓓ 13.376 + 15.75 ≃ ....to the nearest hundredth.

(29.13 - 29.12 - 29.10)

Ⓔ 37.4289 - 14.081 ≃ ....to the nearest hundredth.

(23.350 - 23.348 - 23.248)

Ⓕ 8.657 meters ≃ ....to the nearest centimeter.

(866 - 8.66 - 8.6)

3 Write down the smallest decimal fraction that includes the digits (2, 5, 7, 8), then approximate that number to the nearest hundredth and nearest thousandth.

4 **Complete:**

Ⓐ The number 4.559 ≃ 4.6 to the nearest ....

Ⓑ The difference between $\frac{41}{500}$, 0.473 = ... ≃.........to the nearest tenth.

Ⓒ $3\frac{3}{4}$ - $1\frac{3}{200}$ = ... ≃ .... to the nearest hundredth.

Ⓓ 4357 ÷ 1000 = ... ≃ ....to the nearest hundredth.

5 A road extends for 74389 meters. Find its length in kilometers approximating the result to the nearest hundredth.

(6) **Complete:**

(A) 39 days ≃ .... weeks.

(B) 255 hours ≃ .... days.

(C) 12.4658 kilometers ≃ .... kilometers.

(D) 67 months ≃ .... years.

(7) Given that: X = 13.452 , Y = 7.273

Find X + Y approximating the sum to the nearest hundredth.

Estimate the sum of X+ Y . Is your estimation acceptable? Explain.

COMPARING FRACTIONS

1- **put (✓) or (✗):**

(A) $4376 < 0.407$ ( ) (B) $50.61 > 0.501$ ( )

(C) $\frac{7}{8} > 0.775$ ( ) (D) $3.5 > 3\frac{4}{9}$ ( )

(E) $2\frac{7}{9} < 2.7$ ( ) (F) $\frac{1}{4} = 0.25$ ( )

2- **Find the values of a, b, and c if:**

(A) $\frac{2}{5} = \frac{a}{15}$ (B) $\frac{b}{8} = \frac{15}{24}$ (C) $\frac{2}{3} = \frac{16}{c}$

3- **Rearrange the following numbers ascendingly:**

(A) $\frac{12}{15}$, $\frac{12}{7}$, $\frac{12}{7}$, $\frac{12}{13}$, $\frac{12}{15}$

(B) $\frac{3}{2}$, $\frac{3}{5}$, $\frac{3}{8}$, $\frac{6}{8}$, $\frac{18}{21}$



MULTIPLICATION: MULTIPLYING AND DIVIDING FRACTIONS AND DECIMAL NUMBERS BY 10, 100, 1000

1 Complete:

(A) 3.18 × 10 = ... (B) 3.2 × 10 = ... (C) 5.748 × 100 =........
(D) 72.14 × 100 = ... (E) 9.7 × 100 = ... (F) 3.2172 × 1000 = ...
(G) 62.819 × 1000 = ... (H) 0.341 × 1000 = ... (I) 7.32 × 1000 = ...
(J) (72.12 + 2.7) × 10 = ... (K) (8.35 - 2.14) × 100 (L) (2.35 ×10)-11.1 = ...

2 Choose the correct answer from the parentheses:

(A) 98.7 × 100 = ... (987 - 9870 - 0.987 - 0.0987)
(B) 0.067 × 1000 = ... (6.7 - 67 - 0.067 - 670)
(C) 21.3 × 10 = ... (2130 - 2.13 - 213 - 0.0213)

3 Put (< , > or =) in the empty spaces:

(A) 4.72 × 10 ☐ 0.472 × 100
(B) 3.251 × 100 ☐ 325.1 × 100
(C) 72.15 × 10 ☐ 0.07215 × 1000

4 Complete:

(A) 3.002 Kilograms =........ grams. (B) LE 728.9 = ... piasters.
(C) 37.3 decimeters =....centimeters. (D) 3.6 Kilometers = ... meters

5- Complete:

(A) 64.43 ÷ 10 = (B) 32.57 ÷ 100 = (C) 49.21 ÷ 1000 =
(D) 537.1 ÷ 10 = (E) 6.243 ÷ 100 = (F) 659.1 ÷ 1000 =

6- Choose the correct answer from the parentheses:

(A) 1.7 ÷ 10 = ... (17 , 0.17 , 1.7 , 0.017)
(B) 75.3 ÷ 100 = ... (753 , 7.53 , 7530 , 0.753)
(C) 8.76 ÷ 1000 = ... (87.6 , 8.76 , 0.00876 , 8760)

7- Put the sutiable sign (< or > or =) in each of the following:

(A) 4.532 ÷ 10 ..... 45.32 ÷ 100 (B) 3721 ÷ 1000 ..... 0.3721 × 100

8- Complete:

(A) 3237 grams = ... kgs. (B) 354 meters = ... cm.
(C) 325 meters = ... kilometers. (D) 743 mm = cm.
(E) 54 kilograms = ... tons. (F) 734 cm³ = ... liters.

9- A car consumes one liter of gasoline to travel 10 Kilometers. How many liters of gasoline does it need to travel a distance of 534.8 Kilometers?

MULTIPLYING A FRACTION OR A DECIMAL NUMBER BY AN INTEGER NUMBER

1- Find the result of each of the following:

Ⓐ $2.37 \times 5 =$ ......   Ⓑ 0.251×9 Ⓒ 0.819×8 = ...

Ⓓ $34.2 \times 7 =$ ......   Ⓔ 1.352×11 Ⓕ $2.15 \times 7 + 2.15 \times 3$

2- The price of a bar of chocolate is LE 2.75, what is the cost of 15 bars of the same kind?

3- Ahmed bought 12 cans of juice. The price of each can was LE 1.75. What is the total cost of the juice? How much would the seller pay back to Ahmed if he paid him LE 30?

MULTIPLYING COMMON FRACTIONS

1) Find the result of each of the following :-

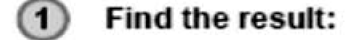
a) – × – = ...   b) – × – = ...

c) – × – = ...   d) – × – = ...

e) – × – = ...   f) – × – = ...



MULTIPLYING DECIMAL FRACTIONS



1 Find the result:

- Ⓐ $0.12 \times 0.3 =$ ....
- Ⓑ $0.625 \times 0.7 =$ ....
- Ⓒ $7.2 \times 0.9 =$ ....
- Ⓓ $1.2 \times 0.37 =$ ....
- Ⓔ $1.25 \times 0.24 =$ ....
- Ⓕ $0.36 \times 0.75 =$ ...

2 Compare the products of the following by putting < or > or =:

- Ⓐ 7.3×0.28 ☐ 0.73×2.8
- Ⓑ 0.342×1.2 ☐ 3.42×0.12
- Ⓒ 172×0.003 ☐ 0.172×0.3

3 Find the result:

$$\begin{array}{r} 0.67 \\ \times\ 2.8 \\ \hline \end{array} \qquad \begin{array}{r} 2.03 \\ \times\ 0.07 \\ \hline \end{array} \qquad \begin{array}{r} 9.72 \\ \times\ 0.46 \\ \hline \end{array}$$

4 Put (> or < or =) to make the following sentences true:

- Ⓐ 12.35×2.5 ☐ 12.35×0.25
- Ⓑ 48.2×3.7 ☐ 4.82×37
- Ⓒ 4.2×1.53 ☐ 4.2×15.3
- Ⓓ 0.206×1.5 ☐ $2.06 \times 0.3 \times 0.5$

5 Find the result:

- Ⓐ 2.3×7.4
- Ⓑ 7.4×0.59

Use the resulted products to find the value of:

First: $(2.3 \times 7.4) \times 0.59$. **Second:** $2.3 \times (7.4 \times 5.9)$, **what do you observe?**

6 Find the results of:

- Ⓐ $23.17 \times 0.75 =$ ...
- Ⓑ 1.34×3.2
- Ⓒ $(26.2 \times 4.7) - 3.14$
- Ⓓ $(5.32 \times 0.15) + 0.146$

7 If the price of one meter of cloth is L.E 6.45, what is the cost of 2.4 meters of cloth?

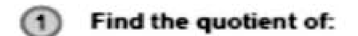
8 A car covers equal distances in equal times. How many kilometers does it cover in 2 hours and 15 minutes if its speed is 73.25 Kilometers per hour?

9 Estimate the products of the following operations, then compare your estimation to the actual result:

- Ⓐ 5.3×2.7
- Ⓑ 18.8×7.1
- Ⓒ 7.82×4.3

10 Salwa bought a piece of cloth with 3.75 meters in length. If the price of one meter of cloth was L.E 33.75, find the cost of cloth approximating it to the nearest pound.

DIVIDING FRACTIONS



① Find the quotient of:

Ⓐ $\frac{4}{5} \div \frac{1}{2} =$ ...... Ⓑ $\frac{3}{8} \div \frac{3}{4} =$ ......

Ⓒ $\frac{1}{2} \div \frac{1}{12} =$ ...... Ⓓ $\frac{2}{7} \div \frac{5}{7} =$ ......

② Complete:

Ⓐ $1\frac{1}{2} \div 3\frac{3}{4} = \frac{1+2}{2} \div \frac{3+\text{...}}{4} = \frac{3}{2} \div \frac{\text{...}}{4} = \frac{3}{2} \times \frac{\text{...}}{\text{...}} = \frac{\text{...}}{5}$

Ⓑ $5\frac{1}{2} \div 3\frac{2}{3} = \frac{11}{2} \div \frac{\text{...}}{3} = \frac{11}{2} \times \frac{\text{...}}{\text{...}} = \frac{3}{\text{...}}$

③ Divide:

Ⓐ $\frac{3}{4} \div \frac{9}{10}$ Ⓑ $\frac{2}{5} \div \frac{7}{10}$ Ⓒ $\frac{1}{2} \div \frac{3}{10}$

Ⓓ $\frac{9}{10} \div \frac{3}{10}$ Ⓔ $\frac{7}{10} \div \frac{9}{10}$ Ⓕ $\frac{4}{10} \div \frac{6}{10}$

DIVIDING AN INTEGER BY A 3-DIGIT NUMBER WITHOUT HAVING A REMAINDER

① **Without doing the divison, choose the correct answer from the parentheses:**

Ⓐ 11664 ÷ 216 = ... (54 - 58 - 62 - 68)

Ⓑ 19708 ÷ 379 = ... (48 - 52 - 54 - 62)

Ⓒ 37440 ÷ 234 = ... (160 - 170 - 200 - 190)

② **Find the quotient of the following:**

Ⓐ 15345 ÷ 165 Ⓑ 62160 ÷ 296 Ⓒ 11183 ÷ 211 Ⓓ 37961 ÷ 493

③ The result of multiplying 2 numbers is 9088. If one of them is 284, find the other number.

④ An owner of packing food factories wanted to pack 5904 kilograms of suger equally in 492 packs. What is the weight of each pack?



DIVISION BY A DECIMAL FRACTION AND BY A DECIMAL NUMBER

1- Find the quotient in each of the following:

(A) 0.416 ÷ 0.8
(B) 0.0874 ÷ 0.46
(C) 1.155 ÷ 0.35
(D) 36.18 ÷ 0.09
(E) 357 ÷ 0.7
(F) 0.7595 ÷ 0.31

2- Find a number when multiplied by 0.64, then the result is 075.52

3- A bundle of paper has a height of 4.5 cm. If all its papers were of equal thickness where the thickness of each paper was 0.090 milimeters, find how many papers does the bundle include?

4- Find the quotient of each of the following:

(A) 2.67 ÷ 1.2
(B) 0.171 ÷ 1.9
(C) 65.7 ÷ 6.57
(D) 7.452 ÷ 621
(E) 38.64 ÷ 8.4
(F) 21.528 ÷ 93.6

5- The length of a roll of cloth is 53.55 meters. It was divided into equal parts where the length of each part is 3.15 meters. Find the number of these parts.

6- Find the quotient:

(A) 94.5 ÷ 3.5
(B) 2.64 ÷ 0.2

7- Complete:

(A) $\frac{7}{3} \simeq$ ...... to the nearest $\frac{1}{10}$
(B) $\frac{5}{9} \simeq$ ......to the nearest $\frac{1}{100}$
(C) $\frac{3}{11} \simeq$......to the nearest $\frac{1}{100}$
(D) $\frac{9}{7} \simeq$...... to the nearest $\frac{1}{10}$



GENERAL EXERCISES

1. Divide the following then approximate the quotient to the nearest $\frac{1}{10}$

   (A) $53.27 \div 2.1$
   (B) $24.31 \div 9.07$
   (C) $1.623 \div 0.152$
   (D) $12.46 \div 0.517$

2. Find the results and approximate them to the nearest hundredth.

   (A) $7.034 \div 1.7$
   (B) 1.775×0.15
   (C) $(3.425 + 1.07) \div 2.8$
   (D) $7.52 \div (14.73 - 11.58)$

3. Place a sutible sign (> , < or =):

   (A) $0.46 \div 4.6$ ☐ 0.01
   (B) 17.17×1.7 ☐ 39
   (C) $53.7 \div 3.5$ ☐ $5.37 \div 0.35$
   (D) $845 \div 4.9$ ☐ $(84.5 \div 49) \times 0.1$

4. Find the quotient in each of the following:

   (A) $9.568 \div 9\frac{1}{5}$
   (B) $2\frac{1}{8} \div 0.125$
   (C) $2\frac{3}{25} \div 0.012$
   (D) $\frac{17}{40} \div 0.85$

5. The area of a rectangle is 9.43cm², and its width is 2.45cm.Find its length and approximate it to the nearest hundredth of centimeter.

6. Fill in the blanks:

   (A) $4.25 \div$ .... $= 8\frac{1}{2}$
   (B) .... $\div 9 = 4.5$

WHAT IS A SET?

❶ Complete the following table as illustrated in the example:

The expression	A set/not a set
The months of the Hegri year.	a set
The tall students in your class.	Not a set
The seasons of the year.	....
The letters of the word "Egypt"	....
The beautiful stories	....
The prime numbers between 5 and 25	....

❷ write down all the elements in the following sets:

The set	The elements
The set of the digits in the number 3072	....
The set of the colors in Egypt's flag	....
The set of the days in the week	....
The set of the year's months that have less than 30 days.	....
The set of 2-digit numbers and each is like the other.	....
The set of the months in the Hegri year.	....

MATHEMATICAL EXPRESSION OF A SET

Complete the following table:

The set	Venn diagram
X = {2, 5, 8}	X: ·...... ·...... ·......
The listing method Y = {..................} The description method is	Y: ·4 ·8 ·2 ·6
Z = the set of the letters forming the word (Stairs)	Z
X = {..............................} Y = ... The set of the elements found in X and Y is	Y: ·3 ·8 ·1 ·0 ·6; X: ·7 ·5 ·4 ·8 ·1

BELONGING OF AN ELEMENT TO A SET



1 Write each of the following sentences using one of the symbols ∈ or ∉.

The sentence	The symbol
6 is an element of the set X	6 ∈ X
5 belongs to the set Y	....
B does not belong to the set M	....
7 does not belong to the set N	....
B is an element of the set K	....

2 If X is a set where X = {2, 3, 5, 6}

Place the suitable symbol ∈ or ∉ in the blanks to make each sentence true:

(A) 3 ..... X (B) 5 ... X (C) 7 .... X (D) 6 ... X

(E) 0 .... X (F) 2 .. X (G) 1 ... X (H) 32 .. X

3 Place the suitable symbol ∈ or ∉ in the blanks to make each sentence true:

(A) 2 ..... {3, 1, 7}

(B) Y ..... the set of the letters forming the letters of the word Egypt.

(C) 3 ..... The set of the odd numbers

(D) 7 ..... the set of the days of the week

(E) The month march ..... the set of the seasons of the year.

(F) 3 ..... {13, 33, 330}

4 Fill in using a suitable number:

(A) If 4 ∈ { 2, x, 5 } Then x = ...

(B) If 5 ∈ { 7, 9 , x } Then x = ...

(C) If 5 ∈ { 3, 4 + x } Then x = ...

(D) ..... ∈ {3, 5, 10} and belongs also to the set of the prime factors of the number 6.

TYPES OF SETS



❶ Which of these sets is a finite set and which of them is an infinite set. Write the elemetns of every finite set:

The set	finite	Number of elements	Infinite
The set of the days in a week	✔	7	✘
The set of the months in a gregorian year			
The set of the odd numbers			
The set of the prime numbers less than 20.			
The set of the letters forming the word (sondos).			
The set of the factors of the number 3.			
The set of the alphabets in the English language.			

❷ Which of these sets is a null set and which of them is not a null set:

Ⓐ The set of students in your class who made a trip to the moon. ( )

Ⓑ The set of the Egyptian governorates in Asia. ( )

Ⓒ The set of those numbers divisible by 7 and are between 8, 15. ( )

Ⓓ The set of the factors of 15 which are divisible by 2. ( )

Ⓔ The set of those numbers divisible by 5 and are between 5, 10. ( )

Ⓕ The set of the governorates in upper Egypt that are located on the Mediterranean sea. ( )

EQUAL SETS



1. Put (✓) for the true sentence and (✗) for the false one:
   - A. {1, 2, 5} = {21, 5} ( )
   - B. {a, r, c} = the set of the letters forming the word (car) ( )
   - C. {1, 2, 3, 6 } = the factors of the number 6. ( )
   - D. {x, 2, 5} = {2, 5, 3} where x = 3. ( )

2. If X = the set of the letters forming the word (lab), Y = the set of the letters forming the word (ball), is X = Y?

3. If {x, 2, 7} = the set of the digits in the number 2257, find the value of x.

4. Match the equal sets in the following columns:

{6, 8, 9}	the set of the letters forming the word (ziwel)
{10, 12, 14, ..., 98}	the set of the digits of 9688
{3, d}	{Summer, winter, spring, autumn}
{z , l, e, w, L}	the set of the months in a year that have 35 days
the set of the seasons of the year.	{d, 3}
∅	the set of the even numbers that have 2 digits.

5. place (✓) for the true sentence and (✗) for the false sentence:
   - A. {0, 2, 4, 6}= the set of the even numbers less than 6. ( )
   - B. {77, 99} = the set of the digits of 9977. ( )
   - C. {3, 6, 9, ...}= the set of the counting numbers that are divisible by 3. ( )

INCLUSION AND SUBSETS



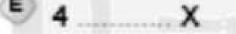
❶ **Complete the table:**

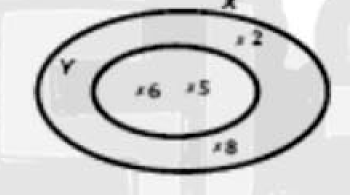
Set X	Set Y	Use ⊂ or ⊄
{7, 9, 10}	{6, 7, 8, 9, 10}	X .... Y
{a, b, c}	{a, b, d, e}	X .... Y
{1, 2, 3}	The set of the prime numbers	X .... Y
The letters of (Ragb)	the letters of (Gabr)	X .... Y
{January, March}	The months of the gregorian year	X .... Y
{London}	The set of the capitals of all the world's countries	X .... Y

❷ **Look at the opposite Venn diagram, then complete the following using one of the symbols ⊂ , ⊄ , ∈ or ∉**

Ⓐ y X   Ⓑ 2 X

Ⓒ {5} .... Y   Ⓓ 6 .... Y


Ⓔ 4 X   Ⓕ {6, 8} X



❸ **Find the subsets for each of the following sets:**

Ⓐ {8}   Ⓑ {∅}   Ⓒ {3, 5, 9}

Ⓓ {99}   Ⓔ The set of the letters forming the word (blbl).

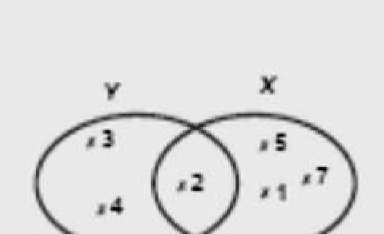
❹ **State whether each sentence is true or false:**

Ⓐ {0} ⊂ {100}   Ⓑ {100} ⊂ {0, 10}

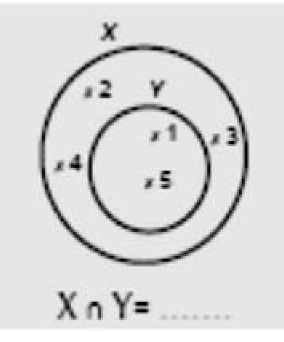
Ⓒ ∅ ⊂ {0}   Ⓓ 9 ∈ {99}

INTERSECTION OF TWO SETS

Complete:

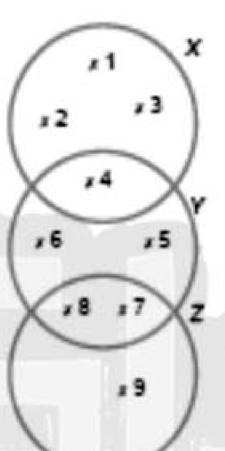


X ∩ Y= ....



X ∩ Y= ....

Look at the opposite Venn diagram and write down X, Y and Z using the listing method, then find the following:



A) X ∩ Y= ....

B) X ∩ Z= ....

C) Y ∩ Z= ....

D) {5, 6, 7, 8} ∩ Z = ...

E) {3, 2} ∩ X = ...

F) {2, 5, 8} ∩ Y = ...

Place the suitable symbol ∈ , ∉, ⊂ or ⊄ to make each of the following sentences true:

A) If X = {1, 2, 3} ∩ {2, 4, 6} then 3 X

B) If Y = {2, 3, 5} ∩ {1, 3, 5} then {1, 2, 3, 5} .... Y

C) If Z = {3, 4, 5} ∩ {2, 3, 4} then 4 .... Z

D) If R = {2, 5, 6} ∩ {3, 5} then R .... {2, 5}

E) If M = {5, 2, 3} ∩ {1, 5} then M .... {2}

If X = {1, 2, 3}, Y = {2, 3, 5, 6} and Z = {1, 2, 5}. Represent each of X, Y and Z using a Venn diagram, then find the following:

First: (X ∩ Y) ∩ Z

Second: X ∩ (Y ∩ Z)

What do you observe?

UNION OF TWO SETS



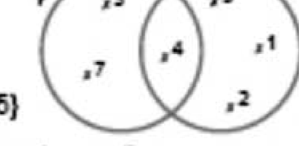
1 Complete:

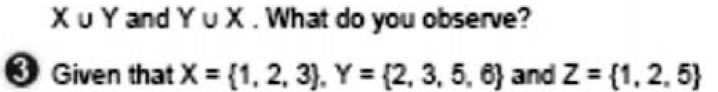
A) {2} ∪ {4} = ...   B) {1, 5} ∪ {1, 3} = ...

C) {1, 2, 12} ∪ {2, 3, 12} = ...   D) {1, 4, 6} ∪ ∅ = ...

2 Look at the opposite Venn diagram, then find

X ∪ Y and Y ∪ X . What do you observe?





3 Given that X = {1, 2, 3}, Y = {2, 3, 5, 6} and Z = {1, 2, 5}

Find each of: (X ∪ Y) ∪ Z and x ∪ (Y∪ Z). What do you observe?

THE UNIVERSAL SET

The given sets in each of the following cases represent subsets, write down a suitable universal set for each case:

1 X = {Cairo, Helwan, 6th of October city},

Y = {Sharqya, Alexandria}

U= ....

2 X = The set of Math teachers at your school.

Y = the set of science teachers at your school.

U= ....

3 X = { 2, 5, 8}

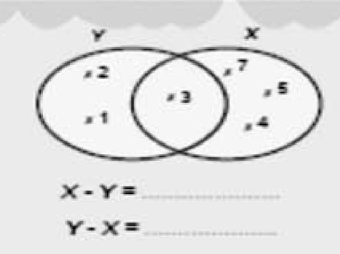
Y = { 2, 3, 7, 8 }

U= ....   (represent U by Venn diagram)

4 X = {Taha Houssen, Youssef Idrees, Tawfik Al-Hakeem}

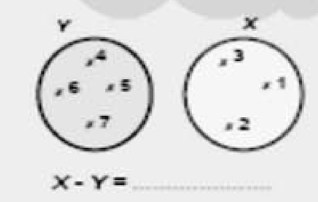
U= ....

THE DIFFERENCE OF TWO SETS



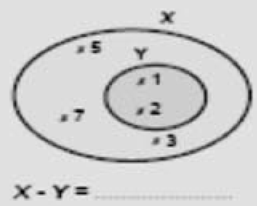
X - Y = ...

Y - X = ...



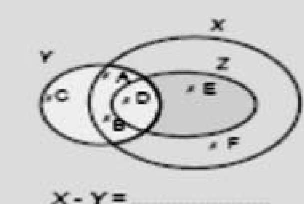
X - Y = ...

Y - X = ...



X - Y = ...

Y - X = ...



X - Y = ...

Y - X = ...

X - Z = ...

Z - Y = ...



THE COMPLEMENT OF A SET

❶ Look at the opposite Venn diagram then complete:



U = ... A = ... A' = ...

❷ Look at the opposite Venn diagram then complete:

U = ... X = ...

X' = ... X ∩ X' = ...

X ∪ X' = ...

❸ Look at the opposite Venn diagram then complete:

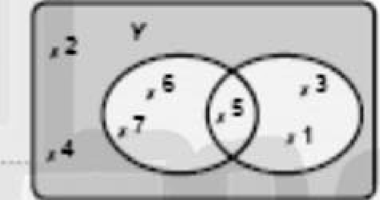
U = ... X = ...

Y = ... X' = ...

Y' = ... Y ∪ X = ...



Y ∩ X = ... (Y ∪ X)' = ...



❹ If U is the set of the even numbers less than 16, A = {4, 6, 10, 12} and

B = {2, 6, 8, 14}. Find each of the following: A∪ B, (A ∪ B)' A ∩ B and (A ∩ B)'.

❺ If U is the set of the factors of 12 and A is the set of the factors 6. find A'.

❻ If U = { 1, 2, 3, 4, 5, 6}. X = {3, 4, 5} and Y = { 1, 2, 3}.

Find each of the following sets:

A X' B Y'

C X ∩ Y D (X ∩ Y)'

E X ∪ Y F (X ∪ Y)'

G X' ∪ Y' H X' ∩ Y'

GENERAL EXERCISES



1 Place the suitable symbol ∈ , ∉ , ⊂ or ⊄ in the blanks:

- A) 8 ...... {5, 7}
- B) {3} ...... {1, 3, 2}
- C) 2 ...... {22, 44}
- D) {1, 2} ......The set of prime numbers
- E) ∅ ...... {0}
- F) (X ∩ Y) X

2 Complete each of the following sentences to have a true sentence:

- A) If X = {2, 3}, Y = {3, 5}, then X ∩ Y = ...
- B) If {1, X} = {2, Y}, then X = ..., Y = ...
- C) If X ⊂ Y, then X ∪ Y = ..., X ∩ Y = ...
- D) {1, 2, 4} - {2, 4, 6} = ...
- E) If 4 ∈ {2, X, 7}, then X = ...

3 Choose the true sentence from the parentheses:

- A) {1, 7} .... {0, 1, 2, 3, 4, ...} (∈ or ∉ or ⊂ or ⊄)
- B) X - X = ... ∅ or zero or {0} or {1})
- C) If {2, 5, 7} = {5, A, 2} then A = ... (2 or 5 or 7 or 0)
- D) {5} - {1, 2, 5} = ... ({5} or {1, 2} or ∅ or {1, 2, 5})
- E) The number of subsets for the set {5} is ...... (0 or 1 or 2 or 3)

4 If U ={1, 2, 3, 4, 5, 6 }, X = {2, 3, 5} and Y= { 3, 4, 5}. Represent the sets by Venn diagram, then write each of the following by the listing method.

X ∪ Y, X ∩ Y, X - Y and X'

5- Look at the opposite Venn diagram and find the following sets using the listing method:

- A) X ∪ Y
- B) X ∩ Y
- C) X - Y
- D) Y'
- E) (X ∪ Y)'

U
Y: 4, 8, 9 | X ∩ Y: 1, 2 | X: 3 | outside: 5

6- Write down all the subsets for the set X = {a, b, c}

Look at the opposite Venn diagrams, then find the following sets using the listing method:

- A) X ∩ Z
- B) X - Y
- C) Y - Z
- D) X ∪ Z
- E) Z - X
- F) X

U
Z: 6, 7 | Z ∩ X: 5 | X: 4, 3 | X ∩ Y: 2 | Y: 1 | outside: 8

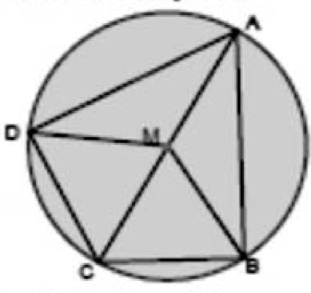
7- If X = { 3, 4, 5}, Y = { 2, 3, 4}
place the suitable symbol ∈ or ∉ or ⊂ or ⊄ in the blanks.

- A) 2 X
- B) {3, 5 } ...... X ∩ Y
- C) {3, 2} ...... X ∪ Y
- D) 5 ...... X - Y
- E) ∅ ...... Y
- F) {2, 3, 4} X



THE CIRCLE

① In the opposite figure, there is a circle whose center is M. Complete:

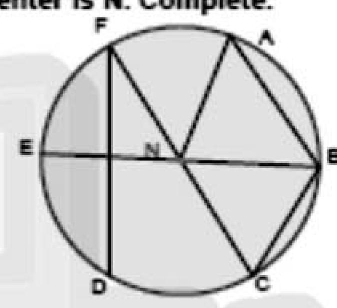


The radii of the circle are ...., ..., ..., ...

The diameter of the circle is ....

The chords of the circle are ...., ..., ..., ...

② In the opposite figure, there is a circle whose center is N. Complete:

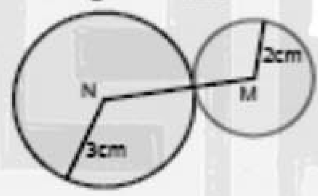


The radii of the circle are ....

The diameters of the circle are ....

The chords of the circle are ....

③ In the opposite figure; M, N are two circles. Find the length of $\overline{MN}$



④ Draw a circle whose center is M and its diameter is 6cm, then draw a striaght line that passes through the point M and intersects the circle at A, B. Draw another straight line that passes through the point M and intersects the circle at C, D

Complete:

Ⓐ $\overline{AB}$ is called .... in the circle.

Ⓑ $\overline{CD}$ is called .... in the circle.

Ⓒ $\overline{MB}$ is called .... in the circle.

Ⓓ Put a suitable sign (> , < or =)

AB .....CD, MC .....3cm, BD.....6cm

DRAWING A TRIANGLE GIVEN THE LENGTHS OF ITS THREE SIDES

① Draw the triangle ABC in which AB = 3cm, BC = 4cm, AC = 5cm. What do you observe?

② Draw the triangle XYZ in which XY = YZ = 7cm, XZ = 4 cm.

③ Draw the triangle LMN in which LM = 8cm, MN = 5cm NL = 6cm.

④ Draw a circle of a radius 2.5cm and draw $\overline{AB}$ as its diameter, then complete drawing the equilateral triangle ABC, then choose the correct answer:

Ⓐ The point C is located ..... the circle (inside - outside - on)

Ⓑ $\overline{AC}$ is ...... (a chord - a radius - something else).

⑤ Draw the triangle ABC in which: AB = 4cm, BC = 6cm CA = 8cm. Then draw a circle whose center is B and its radius is equal to 4cm, then complete the following:

Ⓐ The point A is located .... the circle.

Ⓑ The point C is located .... the circle.

Ⓒ The .... is called the radius of the circle.

⑥ Draw the equilateral triangle ABC whose side is equal to 4cm, then draw a circle whose center is A and radius is equal to 4cm, then complete the following:

$\overline{AB}$ is called .... in the circle.

$\overline{AC}$ is called .... in the circle.

$\overline{BC}$ is called .... in the circle.

DRAWING LINE SEGMENTS FROM THE VERTICES OF A TRIANGLE PERPENDICULAR TO ITS OPPOSITE SIDES

(1) Draw the equilateral triangle ABC whose side is equal to 6cm. Then from its vertices, draw the segments $\overline{AD}$, $\overline{BE}$, $\overline{CF}$ perpendicular to the opposite sides: $\overline{BC}$, $\overline{CA}$, $\overline{AB}$ respectively. Then, measure the lengths of $\overline{AD}$, $\overline{BE}$, $\overline{CF}$. What do you observe?

(2) Draw the triangle LMN in which LM = 4cm, MN = 5cm, NL = 6cm. Then, draw a perpendicular from L to $\overline{MN}$ that intersects it at X. Also draw a perpendicular from M to $\overline{LN}$ that intersects it at Y, then measure the lengths of $\overline{LX}$, $\overline{MY}$.

3- Draw the isosceles triangle ABC whose right angle is B and in which AB = 5cm, then draw the line segment $\overline{DB}$ from point B perpendicular to $\overline{AC}$ and find the length of that line segment.

4- Draw a circle whose center is M and radius is equal to 4cm. Draw the diameter $\overline{AB}$ and label the point C $\in$ the circle M, then draw the triangle ABC and the line segments from its vertices and perpendicular to the opposite sides of the triangle ABC, then label the point of intersection for these line segments.

5- Draw the triangle ABC in which AB = 6cm, BC = 3cm, $m(\angle B) = 60°$, then measure the altitudes of that triangle.

6- Draw the triangle ABC in which AB = 5cm, BC = 6cm, $m(\angle B) = 120°$. Then, draw $\overline{AD}$ perpendicular to $\overleftrightarrow{BC}$, and measure the length of $\overline{AD}$. Draw also $\overline{BE}$ perpendicular to $\overleftrightarrow{AC}$ and measure the length of $\overline{BE}$.

Are $\overleftrightarrow{AD}$ and $\overleftrightarrow{BE}$ intersected at one point?

7- Draw the rectangle ABCD in which AB = 3cm, BC = 5cm, then label the point X $\in \overrightarrow{DA}$ where AX = 2cm. How many locations can be labeled for the point X on the ray $\overrightarrow{DA}$. Draw the traingle XBC then draw $\overline{XY}$ perpendicular from X to $\overleftrightarrow{BC}$.

Can you know the length of $\overline{XY}$ without measuring it by a ruler?



GENERAL EXERCISES

① **Complete the following to have true sentences:**

Ⓐ The chord of a circle is a line segment that connects ....

Ⓑ The longest chord in a circle is called ....

Ⓒ The midpoint of any diameter in a circle is .... of the circle.

Ⓓ .... is used in drawing the circle.

② **Choose the correct answer from the parentheses:**

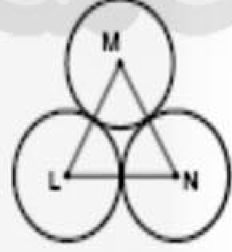
Ⓐ If M is a circle whose diameter is 8cm where MA = 7cm then the point A is located (inside - outside - on) the circle.

Ⓑ If A, B belong to the circle M where M ∈ $\overline{AB}$ then $\overline{AB}$ is called a (chord - diameter - radius) in the circle.

Ⓒ The number of altitudes in any triangle = (1 - 2 - 3).

Ⓓ If $\overline{AB}$, $\overline{AC}$ are two chords in a circle, then $\overline{BC}$ is a (chord-diameter - radius) in the same circle.

Ⓔ In the opposite figure, if the length of each radius in the three circles is 3cm, then the perimeter of the triangle MLN = (6 - 9 - 18) cm



③ Ⓐ Draw a circle whose centre is M and radius is 2.5cm. Then draw its diameter $\overline{AB}$ and draw its chord $\overline{AC}$ of length 3cm. Draw $\overline{BC}$ then find its length.

Ⓑ Draw the isosceles triangle ABC in which BC = 4cm, and AB = AC = 6cm. Then, draw perpendicular segments from their vertices to their three sides.

PROBABILITY



❶ Complete:

A) A box contains 24 lamps, 3 lamps are defective. A lamp has been randomly selected, the probability of getting a functional lamp = ...

B) The probability of failing a student is $\frac{2}{15}$. The probability of success = ...

C) A card has been drawn out of 5 cards containing the numbers:

32 25 14 63 27

The probability of selecting a number that the sum of its two digits is 9 = ...

D) Rolling a regular number cube. The probability of getting an even number = ...

The probability of getting an odd number = ...

The probability of getting a prime number = ...

The probability of getting a number greater than 6 = ...

❷ The following table lists the results of a survey applied on 100 spectators of T.V.

Program	arabic films	foreign films	series	news	football matches
Number of spectators	19	20	15	10	36

A spectator has been randomly selected. Find the probability of selecting a spectator prefers

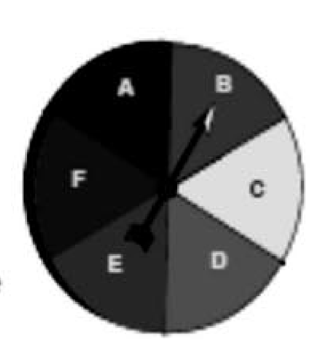
A) football matches. B) foreign films C) series D) news

❸ A card has been randomly drawn out of 10 cards numbered from 1 to 10.

Find the probability of getting:

A) An odd number B) A prime number.

C) An even number greater than 6



❹ A spinner is divided into 6 equal sections.

A) What is the probability of spinning on any section?

B) Spinning the spinner 60 times. How many times are predicted to get the letter (A) as an outcome?

